

## PATENT ABSTRACTS OF JAPAN

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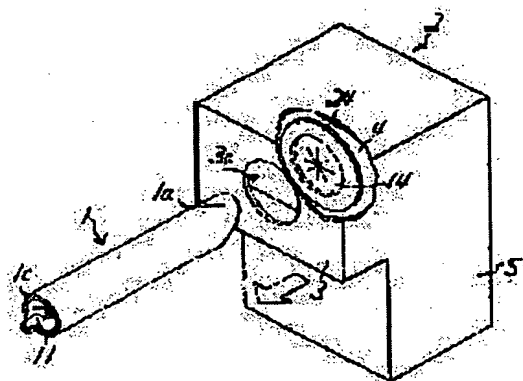
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## (54) WASTE TONER RECOVERING DEVICE

## (57)Abstract:

PURPOSE: To prevent the toner from leaking when the toner is recovered and carried from a toner carrier means to a waste toner storage container.

CONSTITUTION: The waste toner recovering device provided with the toner carrying means 1, disposed with a waste toner receptacle edge connected with a part of a cleaning device, also disposed with a peaked state discharging part 1a at a tip where the waste toner in a cleaning unit is discharged, and the waste toner storage container 2 disposed with a connecting part 4 applied with an elastic member 24 that is opened by the discharging part 1a being inserted through, wherein, the waste toner recovering device is provided with an opening 3a through which the discharging part 1a is inserted and a blind cover 3, with which the outside of connecting part is covered, is formed at the connecting part.



## LEGAL STATUS

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CLAIMS

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## [Claim(s)]

[Claim 1] The electrostatic latent image formed on latent-image support is developed with a toner with a developer. It is the waste toner recovery system which collects the waste toners removed by the above-mentioned cleaning equipment in the image formation equipment of the method which imprints the obtained visible image on a transfer paper, and removes a residual toner from the latent-image support after an imprint with cleaning equipment. A toner conveyance means to have the discharge section of the shape of cusp which the waste toner acceptance end face is connected with some above-mentioned cleaning equipments, and discharges the waste toner in the above-mentioned cleaning unit to a point. In the waste toner recovery system equipped with the waste toner storage container which has the connection section in which the elastic member opened when the above-mentioned discharge section keeps putting was prepared The waste toner recovery system which carries out the description of having opening in which the above-mentioned discharge section is inserted, and having formed covering of a wrap owner bottom in the above-mentioned connection section for the way outside the above-mentioned connection section.

[Claim 2] The waste toner recovery system according to claim 1 characterized by for the joint actuation having been interlocked with and preparing the shutter member which opens and closes the above-mentioned opening when combining the above-mentioned toner conveyance means and the above-mentioned waste toner storage container with the above-mentioned covering.

[Claim 3] The waste toner recovery system characterized by preparing the above-mentioned waste toner storage container in the toner supply container of the above-mentioned developer, and one in a waste toner recovery system according to claim 1 or 2.

[Claim 4] In a waste toner recovery system according to claim 1, 2, or 3 the above-mentioned waste toner storage container By actuation which arranges so that the upper part of the toner hopper for toner supply established in the above-mentioned developer may be taken up, and removes this waste toner storage container from the engagement section of a toner conveyance means The waste toner recovery system characterized by releasing the toner hopper upper part in the lower part of the above-mentioned engagement section edge, and the above-mentioned discharge section making it located above up opening of a toner hopper.

[Claim 5] The cover member which covers the above-mentioned discharge section on the outside of the above-mentioned toner conveyance means in a waste toner recovery system according to claim 1, 2, 3, or 4. In the condition that the elastic member which gives the energization force of the sense which projects in the method of the outside of shaft orientations of the above-mentioned toner conveyance means to this cover member is prepared, and the above-mentioned elastic means is in a free condition When it is made for the point of the above-mentioned cover member to be located in the outside of the above-mentioned discharge section and it makes the above-mentioned waste toner storage container engage with the above-mentioned discharge section, The point of the above-mentioned cover member contacts the outside of opening of the above-mentioned covering. The waste toner recovery system characterized by constituting so that the elastic force of the above-mentioned elastic member

may be resisted by engagement actuation made to engage with the above-mentioned toner conveyance means of the above-mentioned waste toner storage container and the above-mentioned cover member may displace to the shaft orientations of a toner conveyance means.

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Industrial Application] This invention develops with a toner the electrostatic latent image formed on latent-image support with a dry-type developer, imprints the obtained visible image on a transfer paper, can set it to the image formation equipment of the method which removes a residual toner from the latent-image support after an imprint with cleaning equipment, and relates to the waste toner recovery system which collects the waste toners removed by cleaning equipment.

[0002]

[Description of the Prior Art] The equipment which collects the waste toners removed by the cleaning equipment in the image formation equipment of the method which develops conventionally the electrostatic latent image formed on latent-image support with a toner with a developer, imprints the obtained visible image on a transfer paper, and removes a residual toner from the latent-image support after an imprint with cleaning equipment is known well (for example, JP,63-298370,A). the toner cartridge 50 which has the recovery room in which this recovery system holds a waste toner as shown in drawing 8, and the toner which conveys a waste toner in this recovery room -- it is constituted by the conduit 51. this recovery system -- a toner -- it keeps putting to the cap 52 in which tip 51a of a conduit 51 was prepared at the toner recovery room of a toner cartridge 50 and which is cut deeply and attached, and waste toners are collected to a toner cartridge.

[0003]

[Problem(s) to be Solved by the Invention] this conventional recovery system -- a toner -- since that tip 51a collides with slitting and is shocked, when keeping putting tip 51a of a conduit 51 to the cap 51 cut deeply and attached -- a toner -- the toner at the tip of a conduit falls and there is a trouble of being polluted with a toner near both joint.

[0004]

[Means for Solving the Problem] Invention of claim 1 develops with a developer the electrostatic latent image formed on latent-image support with the toner of fine particles. It is the waste toner recovery system which collects the waste toners removed by the above-mentioned cleaning equipment in the image formation equipment of the method which imprints the visible image obtained on a transfer paper, and removes a residual toner from the latent-image support after an imprint with cleaning equipment. A toner conveyance means to have the discharge section of the shape of cusp which the waste toner acceptance end face is connected with some above-mentioned cleaning equipments, and discharges the waste toner in the above-mentioned cleaning unit to a point. In the waste toner recovery system equipped with the waste toner storage container which has the connection section in which the elastic member opened when the above-mentioned discharge section keeps putting was prepared It has opening in which the above-mentioned discharge section is inserted, and is in the waste toner recovery system which carries out the description of having formed covering of a wrap owner bottom in the above-mentioned connection section for the way outside the above-mentioned connection section.

[0005] When combining the above-mentioned toner conveyance means and the above-mentioned waste toner storage container with the above-mentioned covering, invention of claim 2 is interlocked with the joint actuation, and is in the waste toner recovery system according to claim 1 characterized by preparing the shutter member which opens and closes the above-mentioned opening.

[0006] In a waste toner recovery system according to claim 1 or 2, the waste toner recovery system characterized by preparing the above-mentioned waste toner storage container in the toner supply container of the above-mentioned developer and one has invention of claim 3.

[0007] Invention of claim 4 is set to a waste toner recovery system according to claim 1, 2, or 3. By actuation which arranges so that the upper part of the toner hopper for toner supply in which the above-mentioned waste toner storage container was prepared by the above-mentioned developer may be taken up, and removes this waste toner storage container from the engagement section of a toner conveyance means. The toner hopper upper part is released in the lower part of the above-mentioned engagement section edge, and it is in the waste toner recovery system characterized by the above-mentioned discharge section making it located above up opening of a toner hopper.

[0008] Invention of claim 5 is set to a waste toner recovery system according to claim 1, 2, 3, or 4. In the condition that the cover member which covers the above-mentioned discharge section, and the elastic member which gives the energization force of the sense which projects in the method of the outside of shaft orientations of the above-mentioned toner conveyance means to this cover member are prepared in the outside of the above-mentioned toner conveyance means, and the above-mentioned elastic means is in a free condition. When it is made for the point of the above-mentioned cover member to be located in the outside of the above-mentioned discharge section and it makes the above-mentioned waste toner storage container engage with the above-mentioned discharge section, The point of the above-mentioned cover member contacts the outside of opening of the above-mentioned covering. It is in the waste toner recovery system characterized by constituting so that the elastic force of the above-mentioned elastic member may be resisted by engagement actuation made to engage with the above-mentioned toner conveyance means of the above-mentioned waste toner storage container and the above-mentioned cover member may displace to the shaft orientations of a toner conveyance means.

[0009]  
[Function] In invention of claim 1, it has opening in which the discharge section is inserted, and outside the connection section, when keeping putting a way to the elastic member to which the tip of the discharge section is cut deeply and attached since covering of a wrap owner bottom was made to form in the above-mentioned connection section, the tip collides with slitting, it is shocked, and a toner \*\*\*\*\* toner receives the toner from the tip of the discharge section with covering.

[0010] Since the shutter member which opens and closes opening was prepared, when making covering combine a toner conveyance means and a waste toner storage container, the joint actuation is interlocked with, and opening is opened [ by it ] in invention of claim 2 and closed.

[0011] Since the toner storage container and the toner supply container were prepared in one, it is made to serve as recovery of a waste toner and a supplement of a toner with one container in invention of claim 3.

[0012] In invention of claim 4, since the point of the discharge section was located above up opening of a toner hopper, the toner which fell from the tip of the discharge section is fallen and contained in a toner hopper.

[0013] In invention of claim 5, since it covered and the member was prepared, the toner with which the energization force of the sense which projects in a way outside the shaft orientations of this toner conveyance means was given to the outside of a toner conveyance means and which fell from the tip of the discharge section covers, and a member can receive.

[0014]

[Example] One example of this invention is explained based on drawing 1 thru/or 2.

[0015] In drawing 1 and drawing 2, a sign 1 shows a toner conveyance pipe. Waste toner

acceptance end face 1c of the toner conveyance pipe 1 is connected with some cleaning equipments which are not illustrated. Point 1a of the toner conveyance pipe 1 is formed in the shape of cusp, and the discharge section which discharges the waste toner in cleaning equipment is formed in this point 1a. The toner conveyance auger 11 which makes the exterior out of cleaning equipment convey and discharge a waste toner is formed in the interior of the toner conveyance pipe 1.

[0016] A sign 2 shows a waste toner storage container. It is constituted by the toner stores dept. 5 and the connection section 4, the round hole 14 which discharge section 1a keeps putting is drilled in the connection section 4, and the waste toner storage container 2 is closed with the elastic member 24 which has slitting of a radial in the center by the round hole 14. Outside the connection section 4, it has opening 3a in which discharge section 1a is inserted in a way, and the covering 3 with which pars-basilaris-ossis-occipitalis 3b was formed between the connection sections 4 is formed in it. If the waste toner storage container 2 is moved in the direction of an arrow head and it sets to the position of image formation equipment, as shown in drawing 2 R> 2, while discharge section 1a passes opening 3a and pushes slitting of an elastic member 24 open, it will keep putting, and the toner stores dept. 5 will be reached. Then, the tip of discharge section 1a collides with slitting of an elastic member 24, and an impact is given to discharge section 1a. Although a toner falls from discharge section 1a by getting this impact, this toner that fell is caught by pars-basilaris-ossis-occipitalis 3b.

[0017] Other examples of this invention are explained based on drawing 3. In drawing 3, the sign same about the same member as said example is attached, and the explanation is omitted. The SHATA member 6 which opens and closes opening 3a is formed in the outside of covering 3. When spring 6a which has an aperture habit is prepared between the lower limit section of the shutter member 6, and the upper part of covering 3 and the waste toner storage container 2 is removed from the body 7 of image formation equipment, the shutter member 6 is depressed by the elastic force of spring 6a, and will be in a \*\*\*\*\* condition about opening 3a.

[0018] If it is made to move in the direction of an arrow head in order to prepare rib 6b and to set the waste toner storage container 2 to the position of the body 7 of image formation equipment, rib 6b engages with guide section 7a of image formation equipment, KAIDO section 7a shows around, the shutter member 6 will move above covering 3, and opening 3a will be opened by the both-sides lower part of the shutter member 6.

[0019] And the discharge pipe 1 keeps putting to the interior of the waste toner storage container 2.

[0020] Other examples of this invention are explained based on drawing 4. In drawing 4, the sign same about the same member as the 2nd example of the above is attached, and the explanation is omitted. The sign 9 shows the developer and the toner cartridge 12 is formed in the upper part of a developer 9. A toner cartridge 12 forms in one a waste toner storage container and the supply toner cartridge which holds the toner supplied to a developer, and has stripping section 12a which collects and holds a waste toner, and supplement toner hold section 12b which holds the toner supplied to a developer.

[0021] If a developer 9 top is moved in order to make a toner cartridge 12 set to the position of a developer 9, while supplement toner hold section 12a can be located on up opening 9a of a developer and can make a toner fill up, the discharge pipe 1 will keep putting to stripping section 12a.

[0022] If it sets up so that phase correspondence of the capacity of stripping section 12a and the capacity of supplement toner stripping section 12b may be carried out mutually, since detection can be made to serve as waste toner full detection [ in / for the exchange timing of a toner cartridge / a stripping section ], it becomes unnecessary to prepare full detection of a stripping section anew, and a cost top also becomes advantageous.

[0023] Other examples of this invention are explained based on drawing 5. In drawing 5, the sign same about the same member as the 3rd example of the above is attached, and the explanation is omitted.

[0024] Under the discharge section 1a of the conveyance pipe 1, the toner hopper 10 for toner supply with which opening 10a ended in the upper part is arranged. A toner cartridge 22 is

formed above the toner hopper 10 so that opening 10a may be closed. The toner cartridge 22 has stripping section 22a which collects and holds a waste toner, and supplement toner hold section 22b which holds the toner which supplies a developer, and the way is formed in the wrap covering 33 by the connection section 34 of toner stripping section 22a outside the connection section 34. Point 33a of covering 33 is cut aslant, and is diminished.

[0025] Although connection section 22a will keep being pointed [ come ] out to the tip of discharge section 31a while the point of discharge section 31a is located above opening 10a if a toner cartridge 22 is moved above the toner hopper 10 so that opening 10a may be closed Even if a toner falls from the tip of the discharge section 31 at this time, that toner is held in the interior of the toner hopper 10, without being stopped by the point of covering 33a. Since this toner that fell is few, even if mixed with the toner for development in the toner hopper 10, a problem is hardly produced.

[0026] Other examples of this invention are explained based on drawing 6 and drawing 7.

[0027] In drawing 6 and drawing 7, the sign same about the same member as the member of the 1st example of the above is attached, and the explanation is omitted.

[0028] The cover member 41 of the shape of tubing which can move to the shaft orientations of discharge section 1a freely is formed in the outside of discharge section 1a, and the spring 42 which gives the energization force of the sense in which cover between point 41a of the cover member 41 and the cleaning unit 111, and a member 41 projects from the tip of discharge section 1a is formed. The cover member 41 is located in the outside of the point of discharge section 1a when a spring 42 is in a free condition. If the elastic force of a spring 42 is resisted in the condition of having covered opening 3c of covering 3 and having made point 41a of a member contacting as shown in drawing 7, and the waste toner storage container 2 is moved in the direction of an arrow head, while the tip of the discharge section 1 passes opening 3a and pushes slitting open to an elastic member 24, it will keep putting, and the toner stores dept. 5 will be reached. Since conveyance of a waste toner is performed in the condition of having always covered the tip of discharge section 1a, and having been covered with the member 41, it covers, even if a waste toner falls from the tip of discharge section 1a, and it is caught by the member 41, and it is lost that a toner disperses near both the joints.

[0029]

[Effect of the Invention] According to invention according to claim 1, have opening in which the discharge section is inserted, and outside the connection section, since covering of a wrap owner bottom was made to form a way in the above-mentioned connection section Although the tip collides with slitting, therefore it is shocked and a toner falls from the tip of the discharge section when keeping putting to the elastic member to which the tip of the discharge section is cut deeply and attached It falls, covering can receive this toner that falls, it is lost that a toner disperses near the joint, and it is lost that image formation equipment is polluted with a toner.

[0030] Since the shutter member which opens and closes opening to covering was prepared according to invention according to claim 2 and opening is opened and closed [ the joint actuation is interlocked with and ] when combining a toner conveyance means and a waste toner storage container, even if a toner falls from a discharge section tip, that a toner disperses disappears from opening and being polluted with a toner is lost.

[0031] Since invention \*\*\*\*\* according to claim 3, the toner storage container, and the toner supply container were prepared in one, recovery of a waste toner and a supplement of a toner are performed by one container, and the time and effort of exchange of a supply is mitigated.

[0032] Since the point of invention \*\*\*\*\* according to claim 4 and the discharge section was located above up opening of a toner hopper, the toner which fell from the tip of the discharge section is fallen and contained in a toner hopper, it is lost that a toner disperses near the joint, and it is lost that image formation equipment is polluted with a toner.

[0033] In invention according to claim 5, since it covered and the member was prepared, the toner for which the energization force of the sense which projects in a way outside the shaft orientations of this toner conveyance means was given to the outside of a toner conveyance means and which fell from the tip of the discharge section covers, it can receive by the member, it is lost that a toner disperses near the joint, and it is lost that image formation equipment is



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polluted with a toner.

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**TECHNICAL FIELD**

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[Industrial Application] This invention develops with a toner the electrostatic latent image formed on latent-image support with a dry-type developer, imprints the obtained visible image on a transfer paper, can set it to the image formation equipment of the method which removes a residual toner from the latent-image support after an imprint with cleaning equipment, and relates to the waste toner recovery system which collects the waste toners removed by cleaning equipment.

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**PRIOR ART**

[Description of the Prior Art] The equipment which collects the waste toners removed by the cleaning equipment in the image formation equipment of the method which develops conventionally the electrostatic latent image formed on latent-image support with a toner with a developer, imprints the obtained visible image on a transfer paper, and removes a residual toner from the latent-image support after an imprint with cleaning equipment is known well (for example, JP,63-298370,A). the toner cartridge 50 which has the recovery room in which this recovery system holds a waste toner as shown in drawing 8 , and the toner which conveys a waste toner in this recovery room -- it is constituted by the conduit 51. this recovery system -- a toner -- it keeps putting to the cap 52 in which tip 51a of a conduit 51 was prepared at the toner recovery room of a toner cartridge 50 and which is cut deeply and attached, and waste toners are collected to a toner cartridge.

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## EFFECT OF THE INVENTION

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[Effect of the Invention] According to invention according to claim 1, have opening in which the discharge section is inserted, and outside the connection section, since covering of a wrap owner bottom was made to form a way in the above-mentioned connection section Although the tip collides with slitting, therefore it is shocked and a toner falls from the tip of the discharge section when keeping putting to the elastic member to which the tip of the discharge section is cut deeply and attached It falls, covering can receive this toner that falls, it is lost that a toner disperses near the joint, and it is lost that image formation equipment is polluted with a toner.

[0030] Since the shutter member which opens and closes opening to covering was prepared according to invention according to claim 2 and opening is opened and closed [ the joint actuation is interlocked with and ] when combining a toner conveyance means and a waste toner storage container, even if a toner falls from a discharge section tip, that a toner disperses disappears from opening and being polluted with a toner is lost.

[0031] Since invention \*\*\*\*\* according to claim 3, the toner storage container, and the toner supply container were prepared in one, recovery of a waste toner and a supplement of a toner are performed by one container, and the time and effort of exchange of a supply is mitigated.

[0032] Since the point of invention \*\*\*\*\* according to claim 4 and the discharge section was located above up opening of a toner hopper, the toner which fell from the tip of the discharge section is fallen and contained in a toner hopper, it is lost that a toner disperses near the joint, and it is lost that image formation equipment is polluted with a toner.

[0033] In invention according to claim 5, since it covered and the member was prepared, the toner for which the energization force of the sense which projects in a way outside the shaft orientations of this toner conveyance means was given to the outside of a toner conveyance means and which fell from the tip of the discharge section covers, it can receive by the member, it is lost that a toner disperses near the joint, and it is lost that image formation equipment is polluted with a toner.

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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Invention] this conventional recovery system -- a toner -- since that tip 51a collides with slitting and is shocked, when keeping putting tip 51a of a conduit 51 to the cap 51 cut deeply and attached -- a toner -- the toner at the tip of a conduit falls and there is a trouble of being polluted with a toner near both joint.

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**MEANS**

[Means for Solving the Problem] Invention of claim 1 develops with a developer the electrostatic latent image formed on latent-image support with the toner of fine particles. It is the waste toner recovery system which collects the waste toners removed by the above-mentioned cleaning equipment in the image formation equipment of the method which imprints the visible image obtained on a transfer paper, and removes a residual toner from the latent-image support after an imprint with cleaning equipment. A toner conveyance means to have the discharge section of the shape of cusp which the waste toner acceptance end face is connected with some above-mentioned cleaning equipments, and discharges the waste toner in the above-mentioned cleaning unit to a point. In the waste toner recovery system equipped with the waste toner storage container which has the connection section in which the elastic member opened when the above-mentioned discharge section keeps putting was prepared It has opening in which the above-mentioned discharge section is inserted, and is in the waste toner recovery system which carries out the description of having formed covering of a wrap owner bottom in the above-mentioned connection section for the way outside the above-mentioned connection section.

[0005] When combining the above-mentioned toner conveyance means and the above-mentioned waste toner storage container with the above-mentioned covering, invention of claim 2 is interlocked with the joint actuation, and is in the waste toner recovery system according to claim 1 characterized by preparing the shutter member which opens and closes the above-mentioned opening.

[0006] In a waste toner recovery system according to claim 1 or 2, the waste toner recovery system characterized by preparing the above-mentioned waste toner storage container in the toner supply container of the above-mentioned developer and one has invention of claim 3.

[0007] Invention of claim 4 is set to a waste toner recovery system according to claim 1, 2, or 3. By actuation which arranges so that the upper part of the toner hopper for toner supply in which the above-mentioned waste toner storage container was prepared by the above-mentioned developer may be taken up, and removes this waste toner storage container from the engagement section of a toner conveyance means The toner hopper upper part is released in the lower part of the above-mentioned engagement section edge, and it is in the waste toner recovery system characterized by the above-mentioned discharge section making it located above up opening of a toner hopper.

[0008] Invention of claim 5 is set to a waste toner recovery system according to claim 1, 2, 3, or 4. In the condition that the cover member which covers the above-mentioned discharge section, and the elastic member which gives the energization force of the sense which projects in the method of the outside of shaft orientations of the above-mentioned toner conveyance means to this cover member are prepared in the outside of the above-mentioned toner conveyance means, and the above-mentioned elastic means is in a free condition When it is made for the point of the above-mentioned cover member to be located in the outside of the above-mentioned discharge section and it makes the above-mentioned waste toner storage container engage with the above-mentioned discharge section, The point of the above-mentioned cover member contacts the outside of opening of the above-mentioned covering. It is in the waste

toner recovery system characterized by constituting so that the elastic force of the above-mentioned elastic member may be resisted by engagement actuation made to engage with the above-mentioned toner conveyance means of the above-mentioned waste toner storage container and the above-mentioned cover member may displace to the shaft orientations of a toner conveyance means.

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**OPERATION**

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[Function] In invention of claim 1, it has opening in which the discharge section is inserted, and outside the connection section, when keeping putting a way to the elastic member to which the tip of the discharge section is cut deeply and attached since covering of a wrap owner bottom was made to form in the above-mentioned connection section, the tip collides with slitting, it is shocked, and a toner \*\*\*\*\* toner receives the toner from the tip of the discharge section with covering.

[0010] Since the shutter member which opens and closes opening was prepared, when making covering combine a toner conveyance means and a waste toner storage container, the joint actuation is interlocked with, and opening is opened [ by it ] in invention of claim 2 and closed.

[0011] Since the toner storage container and the toner supply container were prepared in one, it is made to serve as recovery of a waste toner and a supplement of a toner with one container in invention of claim 3.

[0012] In invention of claim 4, since the point of the discharge section was located above up opening of a toner hopper, the toner which fell from the tip of the discharge section is fallen and contained in a toner hopper.

[0013] In invention of claim 5, since it covered and the member was prepared, the toner with which the energization force of the sense which projects in a way outside the shaft orientations of this toner conveyance means was given to the outside of a toner conveyance means and which fell from the tip of the discharge section covers, and a member can receive.

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## EXAMPLE

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[Example] One example of this invention is explained based on drawing 1 thru/or 2.

[0015] In drawing 1 and drawing 2, a sign 1 shows a toner conveyance pipe. Waste toner acceptance end face 1c of the toner conveyance pipe 1 is connected with some cleaning equipments which are not illustrated. Point 1a of the toner conveyance pipe 1 is formed in the shape of cusp, and the discharge section which discharges the waste toner in cleaning equipment is formed in this point 1a. The toner conveyance auger 11 which makes the exterior out of cleaning equipment convey and discharge a waste toner is formed in the interior of the toner conveyance pipe 1.

[0016] A sign 2 shows a waste toner storage container. It is constituted by the toner stores dept. 5 and the connection section 4, the round hole 14 which discharge section 1a keeps putting is drilled in the connection section 4, and the waste toner storage container 2 is closed with the elastic member 24 which has slitting of a radial in the center by the round hole 14. Outside the connection section 4, it has opening 3a in which discharge section 1a is inserted in a way, and the covering 3 with which pars-basilaris-ossis-occipitalis 3b was formed between the connection sections 4 is formed in it. If the waste toner storage container 2 is moved in the direction of an arrow head and it sets to the position of image formation equipment, as shown in drawing 2 R> 2, while discharge section 1a passes opening 3a and pushes slitting of an elastic member 24 open, it will keep putting, and the toner stores dept. 5 will be reached. Then, the tip of discharge section 1a collides with slitting of an elastic member 24, and an impact is given to discharge section 1a. Although a toner falls from discharge section 1a by getting this impact, this toner that fell is caught by pars-basilaris-ossis-occipitalis 3b.

[0017] Other examples of this invention are explained based on drawing 3. In drawing 3, the sign same about the same member as said example is attached, and the explanation is omitted. The SHATA member 6 which opens and closes opening 3a is formed in the outside of covering 3. When spring 6a which has an aperture habit is prepared between the lower limit section of the shutter member 6, and the upper part of covering 3 and the waste toner storage container 2 is removed from the body 7 of image formation equipment, the shutter member 6 is depressed by the elastic force of spring 6a, and will be in a \*\*\*\*\* condition about opening 3a.

[0018] If it is made to move in the direction of an arrow head in order to prepare rib 6b and to set the waste toner storage container 2 to the position of the body 7 of image formation equipment, rib 6b engages with guide section 7a of image formation equipment, KAIDO section 7a shows around, the shutter member 6 will move above covering 3, and opening 3a will be opened by the both-sides lower part of the shutter member 6.

[0019] And the discharge pipe 1 keeps putting to the interior of the waste toner storage container 2.

[0020] Other examples of this invention are explained based on drawing 4. In drawing 4, the sign same about the same member as the 2nd example of the above is attached, and the explanation is omitted. The sign 9 shows the developer and the toner cartridge 12 is formed in the upper part of a developer 9. A toner cartridge 12 forms in one a waste toner storage container and the supply toner cartridge which holds the toner supplied to a developer, and has stripping section 12a which collects and holds a waste toner, and supplement toner hold section 12b which holds

the toner supplied to a developer.

[0021] If a developer 9 top is moved in order to make a toner cartridge 12 set to the position of a developer 9, while supplement toner hold section 12a can be located on up opening 9a of a developer and can make a toner fill up, the discharge pipe 1 will keep putting to stripping section 12a.

[0022] If it sets up so that phase correspondence of the capacity of stripping section 12a and the capacity of supplement toner stripping section 12b may be carried out mutually, since detection can be made to serve as waste toner full detection [ in / for the exchange timing of a toner cartridge / a stripping section ], it becomes unnecessary to prepare full detection of a stripping section anew, and a cost top also becomes advantageous.

[0023] Other examples of this invention are explained based on drawing 5. In drawing 5, the sign same about the same member as the 3rd example of the above is attached, and the explanation is omitted.

[0024] Under the discharge section 1a of the conveyance pipe 1, the toner hopper 10 for toner supply with which opening 10a ended in the upper part is arranged. A toner cartridge 22 is formed above the toner hopper 10 so that opening 10a may be closed. The toner cartridge 22 has stripping section 22a which collects and holds a waste toner, and supplement toner hold section 22b which holds the toner which supplies a developer, and the way is formed in the wrap covering 33 by the connection section 34 of toner stripping section 22a outside the connection section 34. Point 33a of covering 33 is cut aslant, and is diminished.

[0025] Although connection section 22a will keep being pointed [ come ] out to the tip of discharge section 31a while the point of discharge section 31a is located above opening 10a if a toner cartridge 22 is moved above the toner hopper 10 so that opening 10a may be closed Even if a toner falls from the tip of the discharge section 31 at this time, that toner is held in the interior of the toner hopper 10, without being stopped by the point of covering 33a. Since this toner that fell is few, even if mixed with the toner for development in the toner hopper 10, a problem is hardly produced.

[0026] Other examples of this invention are explained based on drawing 6 and drawing 7.

[0027] In drawing 6 and drawing 7, the sign same about the same member as the member of the 1st example of the above is attached, and the explanation is omitted.

[0028] The cover member 41 of the shape of tubing which can move to the shaft orientations of discharge section 1a freely is formed in the outside of discharge section 1a, and the spring 42 which gives the energization force of the sense in which cover between point 41a of the cover member 41 and the cleaning unit 111, and a member 41 projects from the tip of discharge section 1a is formed. The cover member 41 is located in the outside of the point of discharge section 1a when a spring 42 is in a free condition. If the elastic force of a spring 42 is resisted in the condition of having covered opening 3c of covering 3 and having made point 41a of a member contacting as shown in drawing 7, and the waste toner storage container 2 is moved in the direction of an arrow head, while the tip of the discharge section 1 passes opening 3a and pushes slitting open to an elastic member 24, it will keep putting, and the toner stores dept. 5 will be reached. Since conveyance of a waste toner is performed in the condition of having always covered the tip of discharge section 1a, and having been covered with the member 41, it covers, even if a waste toner falls from the tip of discharge section 1a, and it is caught by the member 41, and it is lost that a toner disperses near both the joints.

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[Translation done.]

**\* NOTICES \***

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3. In the drawings, any words are not translated.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] It is the perspective view of the waste toner recovery system in which one example of this invention is shown.

[Drawing 2] It is the sectional view showing the condition that the waste toner recovery system of drawing 1 joined.

[Drawing 3] It is the perspective view of the waste toner recovery system in which other examples of this invention are shown.

[Drawing 4] It is the perspective view of the waste toner recovery system in which the example of further others of this invention is shown.

[Drawing 5] It is the sectional view of the waste toner recovery system in which the example of further others of this invention is shown.

[Drawing 6] It is the fragmentary sectional view of the waste toner recovery system in which the example of further others of this invention is shown.

[Drawing 7] It is the sectional view showing the condition of having made the waste toner storage container and toner conveyance means of a waste toner recovery system of drawing 6 engaged.

[Drawing 8] It is the perspective view of the conventional waste toner recovery system.

[Description of Notations]

- 1 Toner Conveyance Pipe
- 2 Waste Toner Storage Container
- 3 Covering
- 6 Shutter Member
- 10 Toner Hopper
- 10a Opening
- 12 Toner Cartridge
- 41 Cover Member
- 42 Spring

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[Translation done.]

\* NOTICES \*

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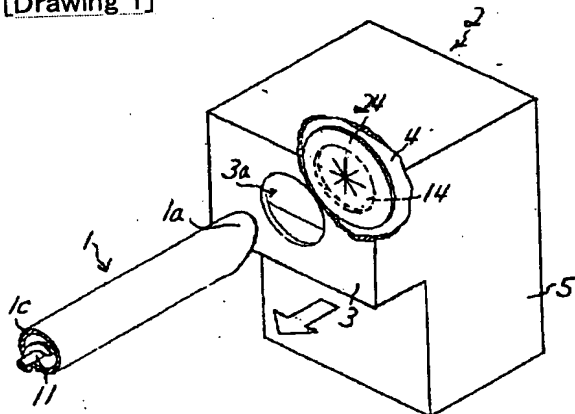
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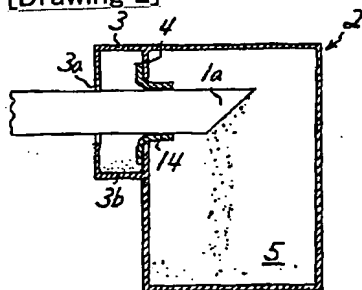
DRAWINGS

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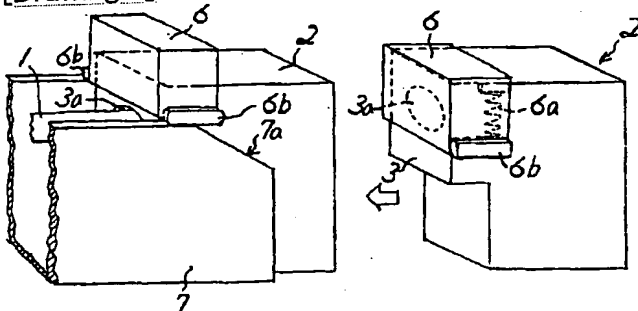
[Drawing 1]



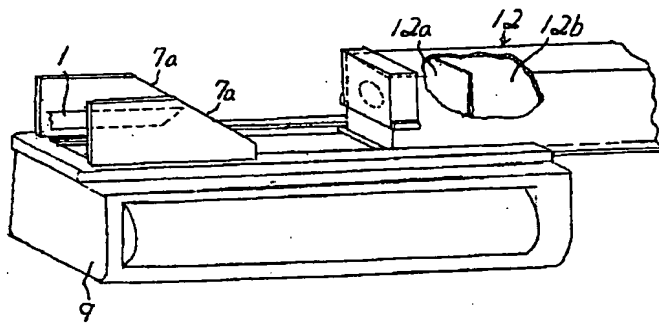
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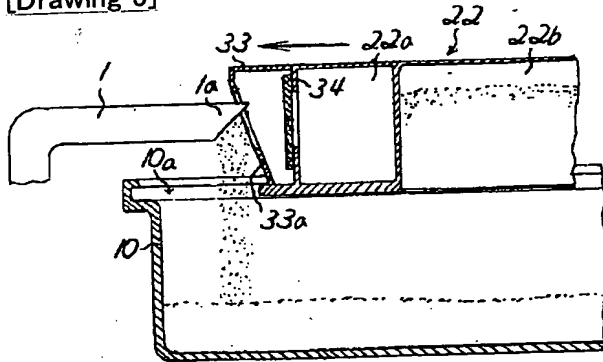
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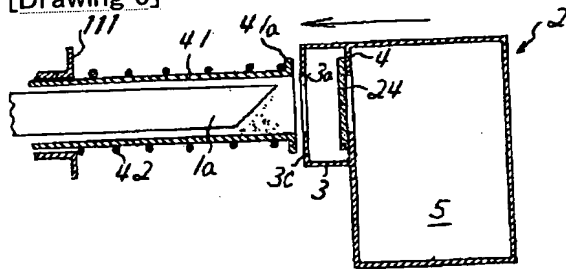
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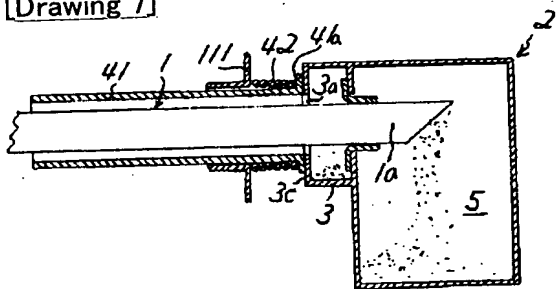
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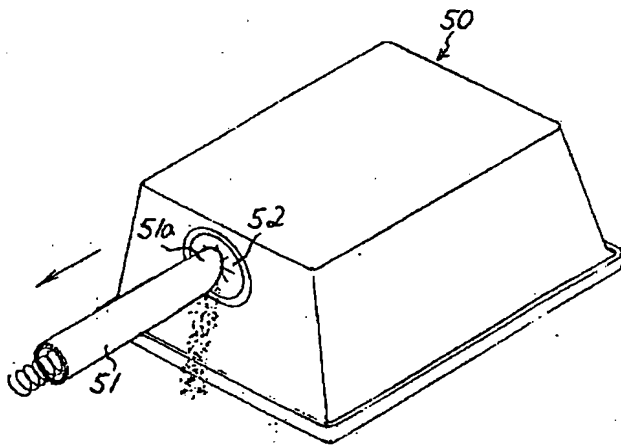
[Drawing 6]



[Drawing 7]



[Drawing 8]



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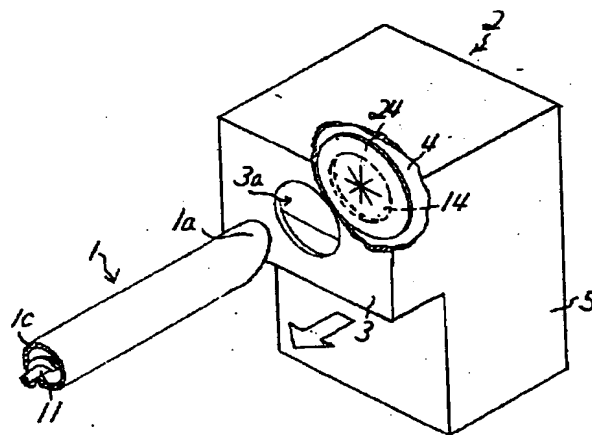
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(54)【発明の名称】 廃トナー回収装置

(57)【要約】

【目的】トナー搬送手段から廃トナー貯蔵容器にトナーを回収・搬送するときにトナーがもれるのを防止することを目的とするものである。

【構成】クリーニング装置の一部に廃トナー受け入れ基端が連結されていて、先端部に上記クリーニングユニット内の廃トナーを排出する尖頭状の排出部1aを有するトナー搬送手段1と、上記排出部が差し通されることにより開く弾性部材24が設けられた連結部4を有する廃トナー貯蔵容器2とを備えた廃トナー回収装置において、上記排出部1aが挿入される開口3aを有し、上記連結部の外方を覆う有底のカバー3を上記連結部に形成したことを特徴する廃トナー回収装置にある。



## 【特許請求の範囲】

【請求項1】 潜像担持体上に形成された静電潜像を現像装置によりトナーで現像し、得られた可視像を転写紙上に転写し、転写後の潜像担持体から残留トナーをクリーニング装置により除去する方式の画像形成装置における上記クリーニング装置により除去された廃トナーを回収する廃トナー回収装置であって、

上記クリーニング装置の一部に廃トナー受け入れ基端が連結されていて、先端部に上記クリーニングユニット内の廃トナーを排出する尖頭状の排出部を有するトナー搬送手段と、

上記排出部が差し通されることにより開く弾性部材が設けられた連結部を有する廃トナー貯蔵容器とを備えた廃トナー回収装置において、

上記排出部が挿入される開口を有し、上記連結部の外方を覆う有底のカバーを上記連結部に形成したことを特徴する廃トナー回収装置。

【請求項2】 上記カバーに、上記トナー搬送手段と上記廃トナー貯蔵容器とを結合させるときに、その結合作動に連動して、上記開口を開閉するシャッター部材を設けたことを特徴とする請求項1記載の廃トナー回収装置。

【請求項3】 請求項1または2記載の廃トナー回収装置において、

上記廃トナー貯蔵容器を上記現像装置のトナー補給容器と一体に設けたことを特徴とする廃トナー回収装置。

【請求項4】 請求項1、2または3記載の廃トナー回収装置において、

上記廃トナー貯蔵容器を、上記現像装置に設けられたトナー補給用のトナーホッパーの上部を塞ぐように配置し、該廃トナー貯蔵容器をトナー搬送手段の係合部から取り外す動作により、上記係合部端部の下部においてトナーホッパー上部が解放され、上記排出部がトナーホッパーの上部開口の上方に位置させたことを特徴とする廃トナー回収装置。

【請求項5】 請求項1、2、3または4記載の廃トナー回収装置において、

上記トナー搬送手段の外側に、上記排出部を被覆する覆い部材と、この覆い部材に上記トナー搬送手段の軸方向外方に突出する向きの付勢力を与える弾性部材とを設け、上記弾性手段が自由状態にある状態において、上記覆い部材の先端部が上記排出部の外側に位置するようにし、上記廃トナー貯蔵容器を上記排出部に係合させるとき、上記覆い部材の先端部が上記カバーの開口部の外側に当接し、上記廃トナー貯蔵容器の上記トナー搬送手段に係合させる係合動作により上記弾性部材の弾性力に抗して上記覆い部材がトナー搬送手段の軸方向へ変位するように構成したことを特徴とする廃トナー回収装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】 本発明は、潜像担持体上に形成さ

れた静電潜像を乾式の現像装置によりトナーで現像し、得られた可視像を転写紙上に転写し、転写後の潜像担持体から残留トナーをクリーニング装置により除去する方式の画像形成装置において、クリーニング装置により除去された廃トナーを回収する廃トナー回収装置に関する。

【0002】

【従来の技術】 従来、潜像担持体上に形成された静電潜像を現像装置によりトナーで現像し、得られた可視像を転写紙上に転写し、転写後の潜像担持体から残留トナーをクリーニング装置により除去する方式の画像形成装置におけるクリーニング装置により除去された廃トナーを回収する装置は、良く知られている（たとえば特開昭63-298370号）。この回収装置は、図8に示すように廃トナーを収容する回収室を有するトナーカートリッジ50と、この回収室に廃トナーを搬送するトナー導管51とにより構成されている。この回収装置では、トナー導管51の先端51aをトナーカートリッジ50のトナー回収室に設けられた切り込み付きのキャップ52に差し通して廃トナーをトナーカートリッジに回収する。

【0003】

【発明が解決しようとする課題】 この従来の回収装置では、トナー導管51の先端51aを切り込み付きのキャップ52に差し通すときに、その先端51aが切り込みを衝突して、衝撃を受けるので、トナー導管の先端のトナーがこぼれ落ちて、両者の接合部の近傍がトナーで汚染されるという問題点がある。

【0004】

【課題を解決するための手段】 請求項1の発明は、潜像担持体上に形成された静電潜像を現像装置により粉体のトナーで現像し、得られる可視像を転写紙上に転写し、転写後の潜像担持体から残留トナーをクリーニング装置により除去する方式の画像形成装置における上記クリーニング装置により除去された廃トナーを回収する廃トナー回収装置であって、上記クリーニング装置の一部に廃トナー受け入れ基端が連結されていて、先端部に上記クリーニングユニット内の廃トナーを排出する尖頭状の排出部を有するトナー搬送手段と、上記排出部が差し通されることにより開く弾性部材が設けられた連結部を有する廃トナー貯蔵容器とを備えた廃トナー回収装置において、上記排出部が挿入される開口を有し、上記連結部の外方を覆う有底のカバーを上記連結部に形成したことを特徴する廃トナー回収装置にある。

【0005】 請求項2の発明は、上記カバーに、上記トナー搬送手段と上記廃トナー貯蔵容器とを結合させるときに、その結合作動に連動して、上記開口を開閉するシャッター部材を設けたことを特徴とする請求項1記載の廃トナー回収装置にある。

【0006】 請求項3の発明は、請求項1または2記載



の廃トナー回収装置において、上記廃トナー貯蔵容器を上記現像装置のトナー補給容器と一体に設けたことを特徴とする廃トナー回収装置にある。

【0007】請求項4の発明は、請求項1、2または3記載の廃トナー回収装置において、上記廃トナー貯蔵容器を、上記現像装置に設けられたトナー補給用のトナーホッパーの上部を塞ぐように配置し、該廃トナー貯蔵容器をトナー搬送手段の係合部から取り外す動作により、上記係合部端部の下部においてトナーホッパー上部が解放され、上記排出部がトナーホッパーの上部開口の上方に位置させたことを特徴とする廃トナー回収装置にある。

【0008】請求項5の発明は、請求項1、2、3または4記載の廃トナー回収装置において、上記トナー搬送手段の外側に、上記排出部を被覆する覆い部材と、この覆い部材に上記トナー搬送手段の軸方向外方に突出する向きの付勢力を与える弾性部材とを設け、上記弾性手段が自由状態にある状態において、上記覆い部材の先端部が上記排出部の外側に位置するようにし、上記廃トナー貯蔵容器を上記排出部に係合させるとき、上記覆い部材の先端部が上記カバーの開口部の外側に当接し、上記廃トナー貯蔵容器の上記トナー搬送手段に係合させる係合動作により上記弾性部材の弾性力に抗して上記覆い部材がトナー搬送手段の軸方向へ変位するように構成したことを特徴とする廃トナー回収装置にある。

【0009】

【作用】請求項1の発明では、排出部が挿入される開口を有し、連結部の外方を覆う有底のカバーを上記連結部に形成させたので、排出部の先端が切り込み付きの弾性部材に差し通されるときに、その先端が切り込みに衝突して、衝撃を受け、排出部の先端からトナーこぼれ落ちるトナーがそのトナーをカバーで受ける。

【0010】請求項2の発明では、カバーに、開口を開閉するシャッター部材を設けたので、トナー搬送手段と廃トナー貯蔵容器とを結合させるときに、その結合作動に連動して、開口が開閉される。

【0011】請求項3の発明では、トナー貯蔵容器とトナー補給容器とを一体に設けたので、廃トナーの回収とトナーの補充とを一つの容器で兼ねさせられる。

【0012】請求項4の発明では、排出部の先端部をトナーホッパーの上部開口の上方に位置させたので、排出部の先端よりこぼれ落ちたトナーがトナーホッパー内に落下・収納される。

【0013】請求項5の発明では、トナー搬送手段の外側に、このトナー搬送手段の軸方向の外方に突出する向きの付勢力の与えられた覆い部材を設けたので、排出部の先端よりこぼれ落ちたトナーが覆い部材で受けられる。

【0014】

【実施例】本発明の一実施例を図1ないし2に基づいて

説明する。

【0015】図1および図2において、符号1はトナー搬送パイプを示す。トナー搬送パイプ1の廃トナー受け入れ基端1cは、図示しないクリーニング装置の一部に連結されている。トナー搬送パイプ1の先端部1aは尖頭状に形成されており、この先端部1aには、クリーニング装置内の廃トナーを排出する排出部が形成されている。トナー搬送パイプ1の内部には、廃トナーをクリーニング装置内から外部に搬送・排出させるトナー搬送オーガ11が設けられている。

【0016】符号2は廃トナー貯蔵容器を示す。廃トナー貯蔵容器2はトナー貯蔵部5と連結部4とにより構成されていて、連結部4には、排出部1aが差し通される丸穴14が穿設されており、丸穴14には、中央に放射状の切り込みを有する弾性部材24で塞がれている。連結部4の外方には、排出部1aが挿入される開口3aを有し、連結部4との間に底部3bの形成されたカバー3が設けられている。廃トナー貯蔵容器2を矢印方向に移動させて画像形成装置の所定の位置にセットすると、図2に示すように排出部1aが開口3aを通過し弾性部材24の切り込みを押し開きながら差し通されて、トナー貯蔵部5に達する。そのとき、排出部1aの先端が弾性部材24の切り込みに衝突して、排出部1aに衝撃が与えられる。この衝撃を受けることにより排出部1aからはトナーがこぼれ落ちるが、このこぼれ落ちたトナーは底部3bにより受け止められる。

【0017】本発明の他の実施例を図3に基づいて説明する。図3において、前記実施例と同じ部材については同じ符号を付してその説明は省略する。カバー3の外側には、開口3aを開閉するシャッター部材6が設けられている。シャッター部材6の下端部とカバー3の上部との間には、開き習性を有するスプリング6aが設けられていて、廃トナー貯蔵容器2を画像形成装置本体7から外したときに、シャッター部材6はスプリング6aの弾性力により押し下げられて開口3aを塞じた状態になる。

【0018】シャッター部材6の両側下部には、リブ6bが設けられていて、廃トナー貯蔵容器2を画像形成装置本体7の所定の位置にセットするために矢印方向に移動させると、画像形成装置のガイド部7aにリブ6bに係合し、ガイド部7aにより案内されてシャッター部材6はカバー3の上方に移動し、開口3aは開かれる。

【0019】そして、排出パイプ1が廃トナー貯蔵容器2の内部に差し通される。

【0020】本発明の他の実施例を図4に基づいて説明する。図4において、上記第2の実施例と同じ部材については同じ符号を付してその説明は省略する。符号9は現像装置を示していて、現像装置9の上部には、トナーカートリッジ12が設けられている。トナーカートリッジ12は、廃トナー貯蔵容器と、現像装置に補給するトナーを収容する補給トナーカートリッジとを一体に形成

したものであり、廃トナーを回収・収容する回収部12aと、現像装置に補給するトナーを収容する補充トナー収容部12bとを有する。

【0021】トナーカートリッジ12を現像装置9の所定の位置にセットさせるために現像装置9上を移動させると、補充トナー収容部12aが現像装置の上部開口9a上に位置させられて、トナーを補充させることができるとともに排出パイプ1が回収部12aに差し通される。

【0022】回収部12aの容量と補充トナー回収部12bの容量とを互いに相対応するように設定すれば、トナーカートリッジの交換タイミングを検出に、回収部における廃トナー満杯検出を兼ねさせることができるので、改めて回収部の満杯検出を設ける必要がなくなり、コスト上も有利になる。

【0023】本発明の他の実施例を図5に基づいて説明する。図5において、上記第3の実施例と同じ部材については同じ符号を付してその説明は省略する。

【0024】搬送パイプ1の排出部1aの下方には、上部に開口10aが明けられたトナー補給用のトナーホッパー10が配置されている。トナーホッパー10の上方には、開口10aを塞ぐようにトナーカートリッジ22が設けられる。トナーカートリッジ22は廃トナーを回収・収容する回収部22aと、現像装置に補給するトナーを収容する補充トナー収容部22bとを有しており、トナー回収部22aの連結部34には、連結部34の外方を覆うカバー33が設けられている。カバー33の先端部33aは斜めに切り殺がれている。

【0025】トナーホッパー10の上方に、開口10aを塞ぐようにトナーカートリッジ22を移動させると、排出部31aの先端部は開口10aの上方に位置させられるとともに、排出部31aの先端は、連結部22aを指し通されるようになるが、このとき排出部31の先端よりトナーがこぼれ落ちても、そのトナーは、カバー33aの先端部に係止されることなくトナーホッパー10の内部に収容される。このこぼれ落ちたトナーはわずかであるので、トナーホッパー10内の現像用トナーと混ざりあっても、ほとんど問題は生じない。

【0026】本発明の他の実施例を図6および図7に基づいて説明する。

【0027】図6および図7において、上記第1の実施例の部材と同じ部材については同じ符号を付し、その説明は省略する。

【0028】排出部1aの外側には、排出部1aの軸方向に移動自在の管状の覆い部材41が設けられており、覆い部材41の先端部41aとクリーニングユニット111との間に覆い部材41が排出部1aの先端より突出する向きの付勢力を与えるスプリング42が設けられている。覆い部材41は、スプリング42が自由状態にあるときは、排出部1aの先端部の外側に位置している。

図7に示すようにカバー3の開口部3cを覆い部材の先端部41aに当接させた状態でスプリング42の弾性力に抗して、廃トナー貯蔵容器2を矢印方向に移動させると、排出部1の先端が開口3aを通過し弾性部材24に切り込みを押し開きながら差し通されて、トナー貯蔵部5に達する。排出部1aの先端は常に覆い部材41により覆われた状態で廃トナーの搬送が行われるので、排出部1aの先端より廃トナーがこぼれ落ちても覆い部材41により受け止められ、両接合部近傍にトナーが飛散することがなくなる。

【0029】

【発明の効果】請求項1記載の発明によれば、排出部が挿入される開口を有し、連結部の外方を覆う有底のカバーを上記連結部に形成させたので、排出部の先端が切り込み付きの弾性部材に差し通されるときに、その先端が切り込みに衝突し、そのため衝撃を受け、排出部の先端からトナーがこぼれ落ちるが、このこぼれおちるトナーをカバーで受けられ、接合部近傍にトナーが飛散されることがなくなり、画像形成装置がトナーで汚染されることがなくなる。

【0030】請求項2記載の発明によれば、カバーに開口を開閉するシャッター部材を設けたので、トナー搬送手段と廃トナー貯蔵容器とを結合させるときに、その結合作動に連動して、開口が開閉されるから、排出部先端からトナーがこぼれ落ちても、開口からトナーが飛散されることがなくなり、トナーで汚染されることがなくなる。

【0031】請求項3記載の発明によれば、トナー貯蔵容器とトナー補給容器とを一体に設けたので、廃トナーの回収とトナーの補充とが一つの容器で行われ、サプライの交換の手間が軽減される。

【0032】請求項4記載の発明によれば、排出部の先端部をトナーホッパーの上部開口の上方に位置させたので、排出部の先端よりこぼれ落ちたトナーがトナーホッパー内に落下・収納され、接合部近傍にトナーが飛散されることがなくなり、画像形成装置がトナーで汚染されることがなくなる。

【0033】請求項5記載の発明では、トナー搬送手段の外側に、このトナー搬送手段の軸方向の外方に突出する向きの付勢力の与えられた覆い部材を設けたので、排出部の先端よりこぼれ落ちたトナーが覆い部材で受けられ、接合部近傍にトナーが飛散されることがなくなり、画像形成装置がトナーで汚染されることがなくなる。

【図面の簡単な説明】

【図1】本発明の一実施例を示す廃トナー回収装置の斜視図である。

【図2】図1の廃トナー回収装置の接合した状態を示す断面図である。

【図3】本発明の他の実施例を示す廃トナー回収装置の斜視図である。

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【図4】本発明のさらに他の実施例を示す廃トナー回収装置の斜視図である。

【図5】本発明のさらに他の実施例を示す廃トナー回収装置の断面図である。

【図6】本発明のさらに他の実施例を示す廃トナー回収装置の部分断面図である。

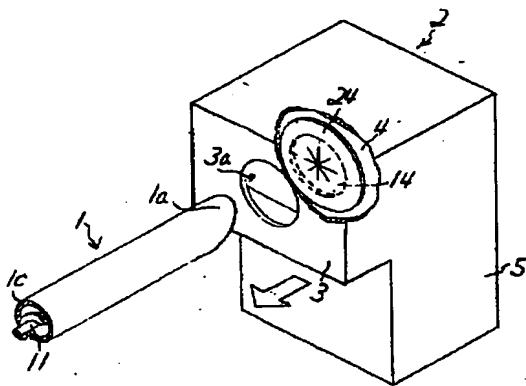
【図7】図6の廃トナー回収装置の廃トナー貯蔵容器とトナー搬送手段とを係合させた状態を示す断面図である。

【図8】従来の廃トナー回収装置の斜視図である。

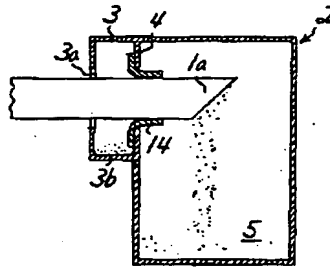
\*【符号の説明】

- |     |           |
|-----|-----------|
| 1   | トナー搬送パイプ  |
| 2   | 廃トナー貯蔵容器  |
| 3   | カバー       |
| 6   | シャッター部材   |
| 10  | トナーホッパー   |
| 10a | 開口        |
| 12  | トナーカートリッジ |
| 41  | 覆い部材      |
| 42  | スプリング     |

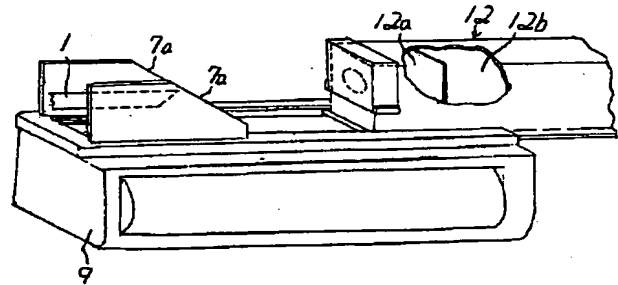
【図1】



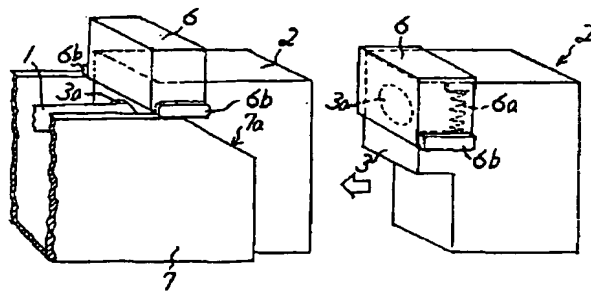
【図2】



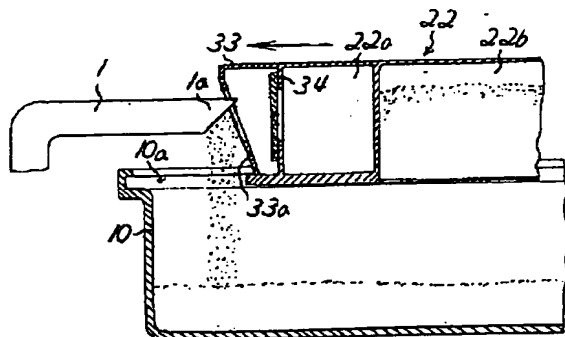
【図4】



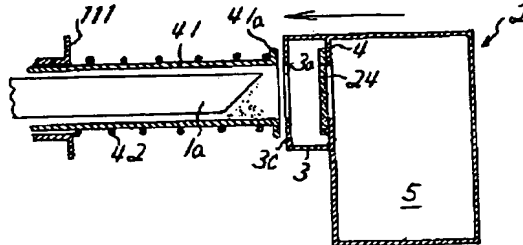
【図3】



【図5】

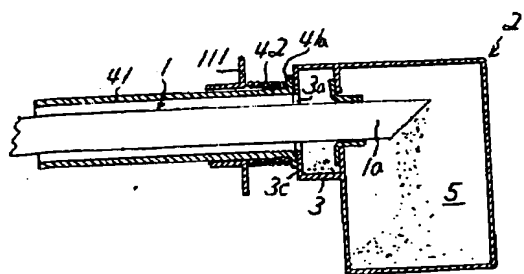


【図6】



(6)

【図7】



【図8】

